

The tracking system for the IDEA detector at future lepton colliders



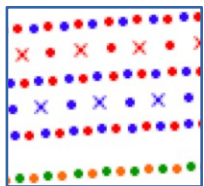
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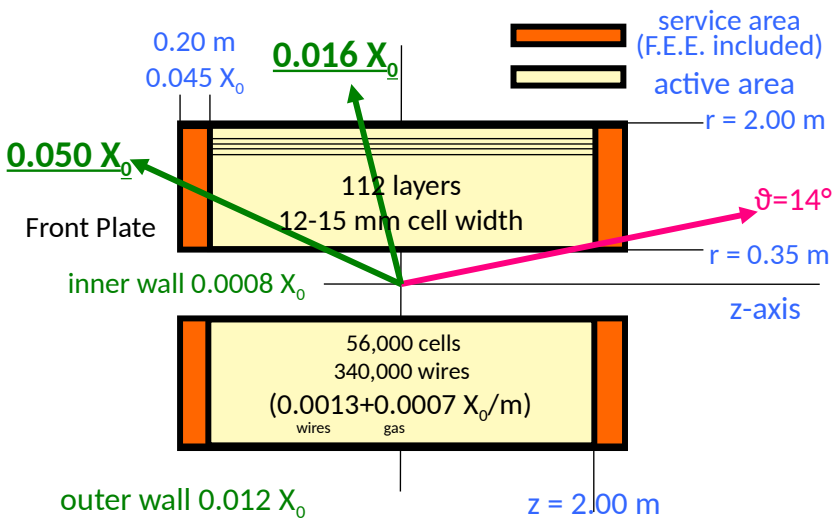
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The proposed ultra-light He based Drift Chamber is 4m long, starting at a radius of ~30cm and extending up to 2m, with ~<1.5cm drift cells, arranged in a full stereo configuration (50-250mrad) and instrumented with the Cluster Counting/Timing technique. The total material budget is approximately 0.016 X₀ for tracks in the barrel region and of 0.05 X₀ for forward tracks, providing a momentum resolution of ~5x10⁻⁴ for <10GeV/c and of <4x10⁻³ for 100GeV/c tracks. Moreover, the use of the Cluster Counting technique will allow for a PID resolution <3%, a factor two better than the resolution attainable with dE/dx technique.

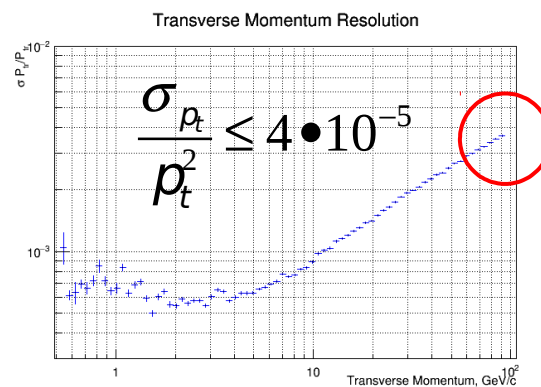
The IDEA Central Drift Chamber:



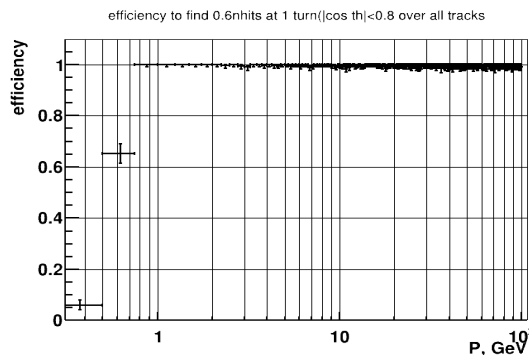
- Full stereo layout, two alternating stereo views from 50 to 250 mrad
- 12÷15 mm wide square cells
- 56,448 cells
- 14 co-axial super-layers, 8 layers each (112 total) in 24 equal azimuthal (15°) sectors



examples of expected single track resolution



track finding efficiency ~ 99.5%



The IDEA DCH will use C. C./T. Technique to improve the P.Id. performance

